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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,724

09/06/2005

Hideaki Dodo

18713

2253

23389

7590

09/12/2006

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EXAMINER

CHAN, RICHARD

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p><b>Application No.</b></p> <p align="center">10/526,724</p>	<p><b>Applicant(s)</b></p> <p align="center">DODO, HIDEAKI</p>	
	<p><b>Examiner</b></p> <p align="center">Richard Chan</p>	<p><b>Art Unit</b></p> <p align="center">2618</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

*1-4 and 6-9*

- 4) ☒ Claim(s) ~~1-9~~ is/are pending in the application.
- 4a) Of the above claim(s) 1 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/4/05</u>  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinomiya (US 6,259,901).

With respect to claim 1, Shinomiya discloses the frequency converter circuit **Fig.1** comprising: a mixer circuit **213** that converts a frequency of an input signal from antenna **1** through the use of a local oscillator frequency signal from local oscillator **222**; and an output amplifier **Fig.3** made up of a push-pull amplifier provided with, a first transistor **T1** to which a predetermined voltage **Vcc** higher than a ground potential is supplied from a collector, a second transistor **T3** having a grounded emitter and a collector connected to an emitter of said first transistor, and a voltage drop circuit adapted for providing a potential lower than the potential of a power supply to the collector of said first transistor, wherein said push-pull amplifier being adapted for amplifying a difference signal of two signals respectively supplied from said mixer circuit and entered into the base of said first transistor and a base of said second transistor and providing an amplified difference signal as output from a junction of said emitter of

the first transistor and said collector of the second transistor. **(Col.7 lines 31-44 and Col.6 lines 6-14)**

With respect to claim 2, Shinomiya discloses the frequency converter circuit according to claim 1, wherein said voltage drop circuit has a resistor **R1** inserted between the collector of said first transistor and said power supply.

With respect to claim 8, Shinomiya discloses the frequency converter circuit according to claim 1, wherein said mixer 213 circuit is adapted to convert said input signal to a signal having a frequency higher than that of said input signal. (Col.6 line 8-24) It is obvious that a mixer can add or subtract a local oscillation signal to an incoming RF signal in order to process the signal to become a baseband or IF signal.

With respect to claim 9, Shinomiya discloses the frequency converter circuit according to claim 1, wherein said mixer circuit 213 is adapted to convert said input signal to a signal having a frequency lower than that of said input signal. (Col.6 line 8-24) It is obvious that a mixer can add or subtract a local oscillation signal to an incoming RF signal in order to process the signal to become a baseband or IF signal.

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya (US 6,259,901) in view of Padi (US 5,162,752).

With respect to claim 3, Shinomiya discloses the frequency converter circuit according to claim 1, however Shinomiya does not specifically disclose wherein said voltage drop circuit has a variable resistor inserted between the collector of said first transistor and said power supply.

The Padi reference however discloses wherein a variable resistor R11 in Fig.2 is used within an amplifier circuit. (Col.6 line42- Col.7 line 52)

It would have been obvious to one of ordinary skill in the art to implement a variable resistor within an amplifier structure as disclosed by Padi within the frequency converter circuit of Shinomiya in order to vary the gain of the entire amplifier system.

With respect to claim 4, Shinomiya discloses the frequency converter circuit according to claim 1, however Shinomiya does not specifically disclose wherein said voltage drop circuit has a diode inserted between the collector of said first transistor and said power supply, said diode having a forward direction directed in the direction from said power supply toward the collector of said first transistor.

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The Padi reference however discloses wherein a diode D1 and D2 are implemented within the amplifier circuitry in order to prevent any feedback signal. (Col.6 line42- Col.7 line 52)

It would have been obvious to one of ordinary skill in the art to implement a diode at the collector of said transistor as disclosed by Padi in order to prevent any feedback power to the voltage supply of the amplifier system as disclosed by Shinomiya.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya (US 6,259,901) in view of Park (US 2003/0134611 A1).

With respect to claims 6 and 7, Shinomya discloses the frequency converter circuit according to claim 1, however Shinomiya does not specifically disclose wherein said mixer circuit is of the double-balance type or the single-balance type.

The Park reference however discloses wherein a mixer is a double balance type mixer. (Paragraph 2)

It would have been obvious to one of ordinary skill in the art to implement a single and double balance mixer as disclosed by Park with the frequency converter as disclosed by Shinomiya in order to obtain only the sum or difference signal at the output of the mixer.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

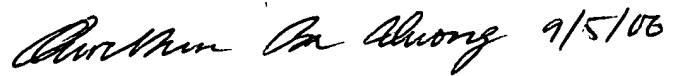
The Trankle reference (US 5,179,731) discloses a frequency conversion circuit.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Chan  
Art Division 2618  
08/29/06

Handwritten signature of Quochien B. Vuong in black ink, dated 9/5/06.

QUOCHIEN B. VUONG  
PRIMARY EXAMINER